

## CLAIMS

What is claimed is:

1. A communication system providing tandem protection comprising:

5           a first network element having a first transceiver and a first protection transceiver;  
            a second network element having a second transceiver and a second protection  
transceiver;

            a first communication path coupling the first network element to the second  
network element;

10           a second communication path coupling the first network element to the second  
network element;

            a splitter for splitting a signal to each of said first communication path and said  
second communication path for transmission to said second network element;

            a selector for selecting one of said first communication path and said second  
15   communication path for reception at said second network element;

            said first network element initiating communication between said first protection  
transceiver and said second protection transceiver upon signal deterioration on said first  
communication path in combination with signal deterioration on said second  
communication path.

20

2. The communication system of claim 1 wherein:

            said signal deterioration is loss of signal detected by said selector.

3. The communication system of claim 1 wherein:

said signal deterioration is loss of modulation detected by said selector.

4. The communication system of claim 1 wherein:

5       said signal deterioration is detected by said second transceiver, said second transceiver generating control signal;

said selector selecting one of said first communication path and said second communication path in response to said control signal.

10    5. The communication system of claim 1 wherein:

said first communication path and said second communication path are WDM paths each carrying a plurality of WDM channels;

said selector selecting one of said first communication path and said second communication path in response to one WDM channel.

15

6. The communication system of claim 1 wherein:

said first communication path and said second communication path are WDM paths each carrying a plurality of WDM channels;

said selector selecting one of said first communication path and said second  
20 communication path in response to said plurality of WDM channels.

7. The communication system of claim 1 wherein:

said selector includes a first selector and a second selector;

said first selector selecting said first communication path; and  
said second selector selecting said second communication path.

8. The communication system of claim 1 further comprising:

5           a first intermediate network in said first communication path, said first  
intermediate network passing signals from said first network element to said second  
network element;

          a second intermediate network in said second communication path, said second  
intermediate network passing signals from said first network element to said second  
10   network element.

9. The communication system of claim 1 wherein:

          upon signal deterioration on said first communication path, said first network  
element initiating communication between said first protection transceiver and said  
15   second protection transceiver is delayed by a hold off time until signal deterioration on  
said second communication path is detected.

10. The communication system of claim 1 wherein:

          said selector selects said second communication path upon signal deterioration on  
20   said first communication path;

          said selector reverting to select said first communication path upon restoration of  
said first communication path.

11. The communication system of claim 1 wherein:

said first network element and said second network element are in a mesh configuration;

said first network element provisioning a third communication path coupling said  
5 first network element to said second network element upon signal deterioration on said first communication path or said second communication path.

12. A method for providing tandem protection in a communication system, the method comprising:

10 transmitting a signal on a first communication path and a second communication path;

selecting one of said first communication path and said second communication path for reception of said signal;

initiating communication of said signal on a protection path upon detecting signal  
15 deterioration on said first communication path in combination with detecting signal deterioration on said second communication path.

13. The method of claim 12 wherein:

said signal deterioration is loss of signal.

20

14. The method of claim 12 wherein:

said signal deterioration is loss of modulation.

15. The method of claim 12 wherein:

said first communication path and said second communication path are WDM paths each carrying a plurality of WDM channels;

said selecting one of said first communication path and said second  
5 communication path being in response to one WDM channel.

16. The method of claim 12 wherein:

said first communication path and said second communication path are WDM paths each carrying a plurality of WDM channels;

10 said selecting one of said first communication path and said second communication path being in response to a plurality of WDM channels.

17. The method of claim 12 wherein:

upon signal deterioration on said first communication path, initiating  
15 communication on said protection path is delayed by a hold off time until signal deterioration on said second communication path is detected.

18. The method of claim 12 further comprising:

selecting said second communication path upon signal deterioration on said first  
20 communication path;

reverting to said first communication path upon restoration of said first communication path.

19. The method of claim 12 further comprising:

provisioning a third communication path upon signal deterioration on said first communication path or said second communication path.